

ABSTRACT:

Problem statement: Improper dye discharge from various industries such as textile, paper, cosmetic and plastics into receiving streams can be one of the sources towards water pollution. The release of these effluents not only causes various disruptions in the ecosystems, but also poses hazard effect as most of the dyes are highly toxic, mutagenic and carcinogenic in nature.

Approach: To prepare an inexpensive and efficient sorbent by chemically modifying rice hull for the removal of Methylene Blue (MB) which is predominantly used in coloring acrylic fiber. Batch experiments were carried out for the removal of MB from aqueous solution by using Tartaric Acid Modified Rice Hull (TARH). Parameters studied include effect of pH, contact time, initial dye concentration and agitation rate and sorption isotherm.

Results: From the results, the percentage uptake of MB increased with increasing contact time and agitation rate. Based on the linear regression correlation coefficient, R^2 , the system under study is more appropriately described by the pseudo-second order model. Maximum sorption capacity calculated from the Langmuir model is 25.0 mg g⁻¹ for MB.

Conclusion: The study has shown the effectiveness of TARH in the removal of MB, a basic dye from synthetic solutions.